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10/580,325	05/24/2006	Kai Schumacher	290909US0X PCT	5682
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER HAILEY, PATRICIA L	
			ART UNIT	PAPER NUMBER
			1793	
			NOTIFICATION DATE	DELIVERY MODE
			04/10/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/580,325	Applicant(s) SCHUMACHER ET AL.	
	Examiner PATRICIA L. HAILEY	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 16, 17, 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicants' remarks and amendments, filed on December 15, 2008, have been carefully considered. No claims have been canceled or added; claims 1-20 remain pending in this application.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Documents were filed on May 24, 2006.

Election/Restrictions

2. Claims 16, 17, 19, and 20 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected process for the production of a flame-hydrolytically produced titanium dioxide powder (claims 16 and 17), and to nonelected sunscreen agents, catalyst, catalyst carrier, photocatalyst, and abrasive (claims 19 and 20), there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on July 31, 2008.

Claims 1-15 and 18 remain under consideration by the Examiner.

Withdrawn Objections

The objection to claims 1-15 and 18 stated in the previous Office Action has been withdrawn in view of Applicants' amendment to claim 1.

Maintained Rejections

The following rejections of record have been maintained; the text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1, 2, 7, 13-15, and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Pratsinis et al. (U. S. Patent No. 5,698,177).

Pratsinis et al. teach titanium dioxide powder synthesized by flame hydrolysis. See col. 6, line 33 to col. 7, line 38 of Pratsinis et al.

The titanium dioxide powder formed “generally will have a high anatase phase composition”, but, depending on the reaction conditions (e.g., residence time in the reaction area), a titanium dioxide powder having a high rutile phase composition may also be formed. See col. 7, lines 39-64 of Pratsinis et al.

See also col. 9, line 59 to col. 10, line 6 of Pratsinis et al., which teaches that manipulation of the prior art's reaction conditions results in the formation of titanium dioxide powders "having a range of anatase phase compositions" of at least 80% anatase phase, and a specific surface area of at least 100 m²/gm, and up to about 200 m²/gm, as well as Table 2 of Pratsinis et al., which depicts exemplary titanium dioxide powders exhibiting rutile and anatase contents and BET surface areas comparable to those recited in **claims 1, 2, 7, and 13**.

With respect to **claims 1 and 15**, Pratsinis et al. does not explicitly teach Applicants' claim limitation that the proportion of particles with a diameter more than 45 μm is within a range of from 0.0001 to 0.05 wt. %, nor does this reference explicitly teach Applicants' claim limitations regarding the half width and the compacted bulk density of the titanium dioxide powder. However, because Pratsinis et al. disclose surface areas that fall within the claimed range of 20 to 200 m^2/g , it would have been within the level of ordinary skill in the art to employ the surface areas disclosed in Pratsinis et al. in the formula recited in claim 1, and select values between -1.3 and -1.0 for the variable "f" to obtain half width values that would fall within the scope of Applicants' claim.

Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably expect the titanium dioxide taught by Pratsinis et al. would exhibit a proportion of particles such as that recited in **claim 1**, and also a compacted bulk density comparable to that recited in **claim 15**, absent the showing of convincing evidence to the contrary, as this reference teaches a titanium dioxide exhibiting the properties of BET surface area and half width in values comparable to those respectively claimed.

A newly discovered property does not render a compound unobvious, if (1) the claimed compound is structurally obvious from a prior art compound, (2) the claimed compound possesses the same property for which the prior art compounds were useful, and (3) the prior art compound in fact possesses the newly discovered property of the

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claimed compound. Monsanto Co. v. Rohm & Haas Co. (DC ED Pa 1970) 420 F2d 950, 164 U.S.P.Q 556.

It is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the applicant to prove by way of tangible evidence that the prior art composition does not necessarily possess characteristics attributed to the CLAIMED composition. In re Spada, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); In re Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); In re Swinehart, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

With respect to **claim 14**, the titanium dioxide disclosed in Pratsinis et al. is considered to read upon the claimed chloride content. Although Patentees' titanium dioxide is not explicitly disclosed as having a chloride content, Applicants' claim limitation "of less than 0.1 wt. %" is considered to include zero percent.

With respect to **claim 18**, it is considered that because Pratsinis et al. disclose a titanium dioxide powder reading upon the instant claims, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably expect the titanium dioxide of Pratsinis et al. to suitably function for the heat protection stabilization of silicones, absent the showing of convincing evidence to the contrary.

4. Claims 1-15 and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (U. S. Patent No. 7,217,407).

Zhang teaches a titania powder (flame hydrolytically produced, see col. 1, line 57 to col. 2, line 8) having a surface area ranging from about 40 to about 150 m²/g, an average particle size in the less than 100 nm range, and a minor proportion of aggregates (formed from primary particles) above 100 nm in diameter, see col. 3, lines 15-27 of Zhang, wherein “minor proportion” indicates that 0 to 10 vol. % of the particles are above 100 nm. This disclosure is considered to read upon Applicants’ claim limitations regarding the BET surface area (**claims 1, 2, and 7**), the “proportion of particles with a diameter of more than 45 μm” (**claims 1 and 12**), and the “equivalent circular diameter” (**claims 4 and 9**).

With respect to **claim 1**, Zhang does not explicitly teach Applicants’ claim limitation regarding the half width of the titanium dioxide powder. However, because Zhang teaches surface areas that fall within the claimed range of 20 to 200 m²/g, it would have been within the level of ordinary skill in the art to employ the surface areas disclosed in Zhang in the formula recited in claim 1, and select values between -1.3 and -1.0 for the variable “f” to obtain half width values that would fall within the scope of Applicants’ claim.

With respect to **claims 3, 8, and 12** regarding the “90% spread of the number distribution...”, Zhang in Figure 1 depict a particle size distribution of Patentees’ titanium dioxide particles, the majority of which exhibits sizes less than 100 nm, and the remainder ranging from 100-10,000 nm.

With respect to **claims 5, 6, 10, and 11** regarding the mean aggregate area and mean aggregate circumference, one of ordinary skill in the art would readily deduce that

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the titanium dioxide particles of Zhang, which exhibit a particle size of less than 100 nm, would exhibit a circumference of $\pi \times \text{diameter}$ (less than 100 nm), or less than 314 nm, and an area of $\pi \times (\text{radius} = \text{diameter}/2)^2$ or $\pi \times (\text{less than } 100/2)^2$, or less than 7850 nm².

With respect to **claims 15 and 18**, it is considered that although Zhang does not explicitly disclose the property of compacted bulk density, or that Patentees' titanium dioxide is "for the heat protection stabilisation of silicones", it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably expect that, absent the showing of convincing evidence to the contrary, the titanium dioxide powder of Zhang would exhibit a compacted bulk density comparable to that respectively claimed, and would also suitably function for the heat protection stabilization of silicones, as Zhang teaches a titanium dioxide powder reading upon that instantly claimed.

Response to Arguments

Applicants' arguments discussing the Inventive and Comparative Examples, as well as the presentation of Applicants' Figure 2, are greatly appreciated. The Examiner respectfully points out, however, that the axis indicator "HB" in said figure should be "HW".

In response to Applicants' arguments that the inventive titanium dioxide powder is substantially different from the titanium dioxide powders of both Pratsinis et al. and Zhang, the Examiner respectfully submits that, because the prior art titanium dioxide

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powders exhibit BET surface areas that fall within the claimed range of “20 to 200 m²/g”, the skilled artisan would find it reasonable to incorporate the prior art surface areas, and also select values falling within the range of -1.3 and -1.0 for the variable “f”, into the formula for determining the half width (HW) of the primary particle distribution, and obtain HW values that fall within the distribution curves represented in Applicants’ Figure 2.

With respect to Pratsinis et al., while this reference does teach that particle aggregation occurs as an effect of the process used to make Patentees’ titanium dioxide, the Examiner respectfully submits that said process is, like that recited in Applicants’ claims, a flame hydrolysis process. Although Pratsinis et al. disclose the employment of electric fields to maximize production of particles having high surface area and that such electric fields result in increased particle size, the Examiner respectfully submits that the employment of electric fields does not prevent the reference from reading upon the instant claims with respect to the surface area of the titanium dioxide particles. Further, because this reference teaches titanium dioxide particles exhibiting a surface area comparable to that instantly claimed, the skilled artisan would reasonably expect the titanium dioxide particles of Pratsinis et al. to exhibit properties consistent with the requirements of the present claims, absent the showing of convincing evidence to the contrary.

With respect to Zhang, Applicants have approximated the half width of the primary particle distributions of this reference using the particle distribution peaks in Figure 1 of the reference, but not from the *surface areas disclosed in the reference*. As

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instantly claimed (via the formula recited in claim 1), the half width distribution is partially based on the surface area of the titanium dioxide.

Further, although the titanium dioxide powder of Zhang “is made by a process that includes the use of hydrogen gas”, the Examiner respectfully submits that the process by which the prior art titanium dioxide powder is not relevant when comparing the titanium dioxide powder of Zhang with that instantly claimed. Applicants’ claim limitation “flame-hydrolytically produced” is a product-by-process limitation present in the preamble of the claim, and is thus not given patentable weight.

Applicants' claims in their present form are merely directed to a titanium dioxide powder exhibiting a specified BET surface area range, a half width of the primary particle distribution, obtained by a formula based on the BET, and characterized by a proportion of aggregates of a diameter of more than 45 μm in the range of from 0.0001 to 0.05 wt. %.

Zhang, as set forth above, teach a titanium dioxide powder exhibiting a BET surface area comparable to that instantly claimed; the skilled artisan would find it reasonable to incorporate the prior art surface areas, and also select values falling within the range of -1.3 and -1.0 for the variable “f”, into the formula for determining the half width (HW) of the primary particle distribution, and obtain HW values that fall within the distribution curves represented in Applicants’ Figure 2. Additionally, the titanium dioxide powder of Zhang exhibits an average particle size in the less than 100 nm range, and a minor proportion of aggregates (formed from primary particles) above 100 nm in diameter, see col. 3, lines 15-27 of Zhang, wherein “minor proportion” indicates

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that 0 to 10 vol. % of the particles are above 100 nm (0.1 μm). From this teaching, the skilled artisan would readily expect that this "minor proportion" would overlap the claimed proportion of aggregates with a diameter of more than 45 μm . See MPEP 2144.05.

For these reasons, Applicants' arguments are not persuasive, and the rejections of record are maintained.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **PATRICIA L. HAILEY** whose telephone number is

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(571)272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICIA L. HAILEY/
Primary Examiner, Art Unit 1793
April 6, 2009